

Prevalence of Malnutrition and Its Associated Factors among Children Under Five Years of Age

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Abstract

Introduction: Malnutrition is the most widespread condition affecting the health of children [1]. As recent data shows higher malnutrition in children of urban area and little work has been done in this regard hence this study aims to estimate the magnitude and explore the socio-economic determinants of malnutrition among under-five children of field practicing area of UHTC. This would help in better understanding of the issue and future planning.

Methods: This Community based, cross-sectional, observational study was done at Sushilpura area from July 2021 to October 2022. Total 360 children under five year of age were assessed for malnutrition and factors associated.

Results: There were 46.7% male and 53.3% female. Majorities (83.9%) were Hindus and were nuclear families (68.3%). Only 6.4 percent families were higher socioeconomic status while only 7.2% households were lowest socioeconomic status. Around one fourth subjects were from ST/SC categories. The prevalence of under nutrition was 56.4%. Overall stunting was about 35.3% with 4.2% of severe stunting; moreover about 21.1% had wasting with 5.6% of severe wasting. Sex, religion, caste, family size, socio economic status, livestock in house, ventilation of house, overcrowding were significant factors associated with malnutrition.

Conclusion: Under-nutrition is high among children of Sushilpura, an urban dwelling of Jaipur city. One third was stunted and every fifth child was wasted too. Low socioeconomic status, less educated parents, poor sanitation, female sex, birth order, lack of exclusive breast feeding, nuclear family.

Keywords: Malnutrition, Prevalence, Children.

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Introduction

Malnutrition is the most widespread condition affecting the health of children [1]. There are 178 million undernourished and 20 million severely malnourished children in whole world with 3.5 to 5 million annual deaths [2]. It indicates that 45 per cent of the children who died before the age of 5 years were found to have malnutrition [3].

Eighty per cent of newborn mortality occurs in low birth weight babies [4]. Most (80%) of undernourished children are from 20 countries only including India where around 60 million children are under nourished [5]. Under weight is the earliest sign of malnutrition and that varies from 2 per cent in developed countries to 30 per cent in developing countries [6]. Long duration malnutrition leads to

stunting [7]. The prevalence of stunting in Southern Asia sub region is much higher (30.7%) than the global average (22.0%) similarly wasting is also higher (14.1%) than the global average (6.7%) [8]

India and neighboring countries like Pakistan, Bangladesh, Nepal has more under- nutrition in urban areas (underweight 28.9% to 36.3%, stunting 13.3% to 41.2% and wasting 16.5% to 19.3%) [9,10,11,12]. NFHS-5 data also revealed underweight, stunting and wasting (27.3%, 30.1%, 18.5%) in India, (28.3%, 28.3%, 18.3%) in Rajasthan and (25.2%, 35.8%, 18.3%) in Jaipur city respective [13]. The long-term under nutrition in childhood results in several consequences such as delayed motor and skill milestones, low intelligent

quotient, behavior specific illnesses and infection. Poor school achievement, performance, low attendance and poor educational outcome are few more consequences of malnutrition that results in low income-earning capacity later in their life [14]. The recent literatures says that

childhood under nutrition increases risk of cardiovascular disease, type 2 diabetes and others diseases due to disproportionate and rapid weight gain in later years of childhood life [15]

Primary Objective: To estimate the prevalence of malnutrition among children aged five year residing in field practice area of Urban Health Training Centre, SMS Medical College, and Jaipur.

Secondary Objective: To determine factors associated with malnutrition among study participant.

Methodology

Study Type: Community based cross-sectional, observational study.

Study Period: The study period will be from April 2021 to March 2022.

Sample Size: A sample of 360 children under five year of age is calculated at 95% confidence & 5% absolute error to verify the expected 34.9% prevalence of malnutrition among under5 year children [nfhs4].

Sampling Unit: Unit of study is Family.

Sampling Procedure: We have randomly selected 360 children of age group 0- 59 months in Sushilpura under UHTC of SMS Medical College, Jaipur. Sushilpura has a population of 9868 with 1522 households. A list of households was taken from UHTC. Three hundred sixty households were randomly selected out of 1522 households using computerized random number table.

One randomly selected child was included in the study from each household where number of children below five year of age was more than one using chit method. If there was no child below five year available in any of randomly selected household then house next to this was considered for study. All children with no malnutrition from these selected households were also assessed and compared for determining the associated factors.

Study Variables: Weight as per age, Height as per age, Height as per weight

- Mid arm circumference
- Vaccination status
- No of visits to AWC in last 2 month
- H/o of exclusive breast feeding in children up to 6 month of age
- Weaning status in children of age 6 to 18 month of age
- Age of weaning
- Socio demographic factors :- Age, Sex, parents education, parents occupation, no of Siblings, water supply, monthly family income, monthly per capita income, livestock in house, overcrowding status

Inclusion Criteria: Under five year's children and where Parents/ Guardians gave written informed consent.

Study Tool:

- A semi structured proforma would be used for data of socio demographic variables.
- WHO growth chart for detection of malnutrition.

Statistical Analysis: Continuous data would be summarized in terms of mean and standard deviation, difference in two mean would be analyzed using student's t test, count data would be expected in forms of proportion, difference in proportion would be analyzed using chi square test. The level of significance would be kept 95% for all statistical analysis.

Result

In present study a total of 360 children were covered, of which 21% were below 1 year, 43.3% were 1-3 years of age and 35% were 4-5 years of age. There were 46.7% male and 53.3% females (48.3%) population. Majorities (83.9%) of the households were Hindus, and 68.3% of the households were nuclear families, 21.7% were extended family and 10% were joint families. Only 6.4 percent families were higher socioeconomic status while only 7.2% households were lowest socioeconomic status in present study. 24.4% household was ST/SC categories and 75.6% were general caste. The prevalence over-nutrition was 3.9% and under-nutrition was 56.4% out of which 35.3% stunted and 21.1% wasted.

Table 1: Association of Socio demographic variables with nutritional status of children

Variable	Total n= 360 (100%)	Malnutrition status			P- value
		Normal (39.7%)	n=143	Over-weight 14(3.9%)	
Age					
1-12	78(21.6%)	27(35%)	6(7.69%)	45(57.6%)	0.209
13-24	88(24.44%)	29(33%)	4(4.55%)	55(62.5%)	
25-36	68(18.89%)	28(41%)	2(2.94%)	38(55.8%)	
37-48	69(19.17%)	35(51%)	0	34(49.2%)	
49-60	57(15.83%)	24(42%)	2(3.51%)	31(54.3%)	
Sex					
Female	168(46.67%)	58(34.5%)	4(2.3%)	106(63.1%)	0.039
Male	192(53.33%)	85(44.2%)	10(5.2%)	97(50.5%)	
Religion					
Hindu	302(83.8%)	132(43.7%)	10(3.3%)	160(52.9%)	0.002
Muslim	45(12.5%)	6(13.3%)	4(8.8%)	35(77.7%)	
Other's	13(3.6%)	5(38.4%)	0	8(61.5%)	
Marital Status					
Divorced	8(2.22%)	3(37.7%)	0	5(62.3%)	0.826
Married	352(97.7%)	40(39.7%)	14(3.9%)	198(56.2%)	
Family Type					
Extended	78(21.6%)	48(61.5%)	8(10.2%)	22(28.2%)	0.00
Joint	36(10.0%)	36(100.0%)	0	0	
Nuclear	246(68.3%)	59(23.9%)	6(2.4%)	181(73.5%)	
SES					
Upper	23(6.3%)	18(78.2%)	5(21.7%)	0	0.00
Upper Middle	78(21.6%)	17(21.7%)	2(2.5%)	59(75.6%)	
Lower Middle	111(30.8%)	14(12.6%)	1(0.9%)	96(86.4%)	
Upper Lower	122(33.8%)	94(77.0%)	6(4.9%)	22(18.0%)	
Lower	26(7.2%)	-	-	26(100.0%)	
Type of House					
Kaccha	4(1.1%)	0	0	4(100.0%)	0.001
Mixed	18(5.0%)	0	0	18(100.0%)	
Pakka	338(93.8%)	143(42.3%)	14(4.1%)	181(53.5%)	
Livestock in house					
No	349(96.9%)	135(38.6%)	12(3.4%)	202(57.8%)	0.001
Yes	11(3.0%)	8(72.7%)	2	1(9.0%)	
Ventillation					
Adequate	220(61.1%)	117(53.1%)	14(6.3%)	89(40.45%)	0.001
Not Adequate	140(38.8%)	26(18.57%)	0	114(81.43%)	
Overcrowding					
Absent	224(62.2%)	125(55.8%)	10(4.4%)	89(39.7%)	0.00
Present	136(37.7%)	18(13.2%)	4	114(83.8%)	
ANC Visit					
>4	238(66.1%)	138(57.9%)	13(5.4%)	87(36.5%)	0.00
<4	122(33.8%)	5(4.1%)	1	116(95.0%)	
Birth Weight					
Normal	261(72.5%)	103(39.4%)	10(3.8%)	148(56.7%)	0.98
Low Birth Weight	99(27.5%)	40(40.4%)	4	55(55.5%)	

Table 2: Association of Nutritional status with Mother & Child associated factors

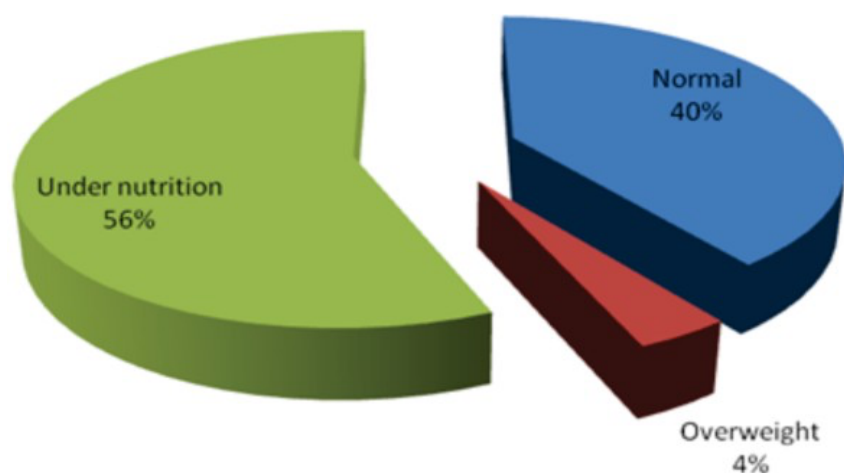
Complete Immunizati on till date	286(79.4%)	138 (48.2%)	12(4.2%)	136(47.5%)	0.00
Incomplete/Not mmunized	28(7.7%)	0	0	28(100.0%)	
Not Immunized	46(12.8%)	5(10.8%)	2(4.3%)	39(84.7%)	
Mother's hand washing practice					
Not Practiced	142(39.4%)	0	2(1.4%)	140(98.5%)	0.00
Practiced	218(60.5%)	143(65.6 %)	12(5.5%)	63(28.9%)	
Child hospitalization in last one year					
No	275(76.3%)	132(48.0%)	11(4.0%)	132(48.0%)	0.00
Yes	85(23.6%)	11(12.9%)	3(3.5%)	71(83.5%)	
Personal hygiene of children					
Fair	110(30.5%)	48(43.6%)	1(0.9%)	61(55.4%)	0.001
Good	182(50.5%)	88(48.3%)	11(6.0%)	83(45.6%)	
Poor	68(18.8%)	7(10.2%)	2(2.9%)	59(86.7%)	

Female child had significantly more malnourished (63.1%) as compared to male (50.2%). Muslims had significantly more (77.7%) malnourished children as compared to Hindu (52.9%). General category had 50% malnourished and Sc/St had 76.1%, this difference was significant ($p < 0.05$).

Bigger family size where 7-9 family members with elderly people to look after young children had 12.5% of under-nourished compare to the families where only 1-3 members are present had much higher proportion (68.4%) of under-nourished children. No Child of joint family was under-nourished compared to nuclear family (73.5%). Lower middle class is significantly associated with malnutrition, with type of housing condition as kaccha houses had more under-nourished child as

compared to pakka houses. In present study a total of 360 children were covered, of which 21% were below 1 year, 43.3% were 1-3 years of age and 35% were 4-5 years of age.

There were 46.7% male and 53.3% females (48.3%) population. Majorities (83.9%) of the households were Hindus, and 68.3% of the households were nuclear families, 21.7% were extended family and 10% were joint families. Only 6.4 percent families were higher socioeconomic status while only 7.2% households were lowest socioeconomic status in present study. 24.4% household was ST/SC categories and 75.6% were general caste. The prevalence over-nutrition was 3.9% and under-nutrition was 56.4% out of which 35.3% stunted and 21.1% wasted.

**Figure 1: Distribution of study participants as per Nutrition status**

Association of livestock with nutritional status of children: Presence of livestock, absence of overcrowding and adequate house ventilation all is significantly associated with malnutrition. ANC visits of mother, exclusive breast feeding, mother hand washing practice, child illness history in last one year, personal hygiene with of children show significant difference with nutritional status of children.

Discussion

India and neighboring countries like Pakistan, Bangladesh, and Nepal has more under-nutrition in urban areas [9, 10, 11, 12, 13]. Present study revealed that 56% of children <5 year were suffering from malnutrition, little higher (66.5%) prevalence was observed by Anuradha et al study [18]. Prevalence of underweight, stunting and wasting in children up to 5 year was 33.3%, 35.3% and 21.1%

respectively, it also revealed that stunting was most common form of malnutrition.

This was in synch with finding of Sahu et al (38%) [19], Joe et al (33%) [20] and Sujata et al Study (42%) [21]. Age is not significantly associated with malnutrition. Children from Muslim families were more (77.7%) malnourished than Hindu (52.9%) & others (61.5%) religious communities, similar results in Nidhi et al (87% vs 57%) study [22]. Under-nutrition was more in children from schedule caste/ scheduled tribe almost equal proportion was reported in Anuradha et al, Nidhi et al study, probably due to the general social backwardness in education, resources, social mobility and opportunities. More girls were malnourished than boys, similar was seen by Suraj et al, [23] gender-centric discrimination in early childhood, family and community attitudes towards the girl child may be the reason for it. Joe et al study shows opposite i.e. male have higher under nutrition [20].

Low family income results in lower literacy rate, low purchasing capacity and thus accelerating food insecurity resulting higher under nutrition rates. Present study, edem et al [24], baran et al study [25] also supported this fact. Low income also increases the likelihood of infection through inadequate personal and environmental hygiene mechanisms. Illiterate parents had higher percentage of under nourished children (90%) that is in synch with Sahu et al (75%) [19], Sujata et al study (92%) [21]. This could be due to higher earning, awareness of general health and nutrition, due to higher exposure to mass media and other opportunities. Children with history of exclusive breast feeding have lower (35.9%) under-nutrition than who did not practice it (93%), this result was supported by Sujata et al (27% vs 85%), Suraj et al, Anuradha et al study [18].

Completely immunized children had lower (47.5%) under-nutrition than incomplete (100%) or not immunized (84.7%) children, similar result found in Sahu et al study [19], Suraj et al study [23]. This could be due to the fact that not only it indicates better health care seeking and awareness regarding general health but also lowers the chance of infections. The proportion of under nourished children (28.9%) of Mothers who practiced hand washing was lower than to non-practiced mothers (98.5%), similar result found in Sethy et al study [22]. Overcrowded families have more (83.8%) under-nourished children than families where overcrowding was absent (39.7%), similar result found in Joe et al study [20]. History of mother's illness during pregnancy had more under-nourished (91%) children as compared to children whose mother were free from any illness (46.8%) during pregnancy, similar findings found in Joe et al study [20]. Adequately ventilated houses had less under-nourished (40.5%) children than houses with Inadequate ventilation (81.4%). Under nutrition was

less (45.6%) among children with good personal hygiene as compared to poor personal hygiene (86.7%).

Low proportion of malnutrition were found among mothers who had complete antenatal care visits, similar result found in Suraj et al study [23]. Apart from the above factors associated with under-nutrition, other factors such as type of delivery (pre-term/term), place of delivery (institutional or home), type of family, supplementation of IFA tablet during pregnancy, weaning, occupation of father, availability of toilet facilities in house, & family size, are all important determinants that all are associated with under nutrition.

Conclusion:

Under-nutrition was prevalent in half of children below five years of age in Sushilpura, an urban dwelling of Jaipur. Stunting and underweight is more prevalent than wasting.

Over nutrition was also seen in four percent of children. Poor sanitation, high birth order, lack of exclusive breast feeding, nuclear family, frequent episodes of diarrhea were associated factors. Presence of domestic livestock and absence of overcrowding were protective factors.

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